in oil content of the mixture it is measuring within 5 seconds after the change occurs.

(f) Access to the bilge alarm must require the breaking of a seal, except when—

(1) Re-zeroing the instrument;

(2) Checking the instrument drift; or

(3) Checking the repeatability of the instrument reading.

(g) Each bilge alarm must activate its alarm whenever clean water is used for cleaning or zeroing purposes.

(h) The bilge alarm must record date, time, alarm status, and operating status of the 15 ppm bilge separator. The recording device must also store data for at least 18 months and be able to display or print a protocol. In the event the 15 ppm bilge alarm is replaced, means must be provided to ensure the data recorded remains available on board for 18 months.

[CGD 76–088a, 44 FR 53359, Sept. 13, 1979, as amended by USCG–2004–18939, 74 FR 3391, Jan. 16, 2009]

§ 162.050–35 Bilge alarm: Approval tests.

This section contains requirements that apply to bilge alarms.

(a) *Test Conditions.* (1) Each test must be conducted under the conditions prescribed for meters in § 162.050–27(a)(1) through (a)(5), (a)(7), (a)(8), (a)(10), (a)(11), and (a)(13).

(2) The tests in this section must be performed using test fluids described in § 162.050–20.

(3) The oil content of each sample must be measured using the method described in § 162.050–39.

(b) *Test No. 1A Calibration and Zero Test.* (1) The bilge alarm is calibrated and zeroed to manufacturer's instructions.

(2) It is then fed with water for 15 minutes and then with a mixture of Test Fluid A and water in the following concentrations: 0 ppm, 15 ppm, and the highest oil concentration that can be read on the monitor. A sample of the mixture causing actuation of the alarm is taken. The alarm is then fed with water for 15 minutes.

(3) Repeat steps in paragraphs (b)(2) of this section first using Test Fluid B and then again with Test Fluid C. Collect samples as required in the test for each run of Test Fluid B and Test Fluid C.

(4) If the bilge alarm must be calibrated and re-zeroed between test fluids, this must be noted in the test report.

(c) *Test No. 2A Contaminant Test.* (1) The bilge alarm is fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water. At the end of the 5-minute period an oil content reading is obtained and recorded.

(2) The bilge alarm is then fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water contaminated with a 10 ppm concentration of iron oxide. Any change in the bilge alarm reading during the 5 minutes is recorded.

(3) Repeat steps in paragraphs (c)(1) and (2) of this section using iron oxide concentrations of 50 ppm and 100 ppm.

(4) The bilge alarm is then fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water. At the end of the 5-minute period an oil content reading is obtained and recorded.

(5) The bilge alarm is fed for 5 minutes with a 10 ppm mixture of Test Fluid B and fresh water with 6 percent sodium chloride. Any change in the bilge alarm reading is recorded.

(d) *Test No. 3A Sample Pressure or Flow Test.* (1) The bilge alarm is fed with a mixture of Test Fluid B and water and the test fluid content of the mixture is increased until the bilge alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation of the alarm is taken.

(2) If the alarm has a positive displacement mixture pump, the mixture pressure is reduced to one-half of the alarm's maximum design pressure. If the alarm has a centrifugal mixture pump or is not equipped with a mixture pump, the mixture flow rate is reduced to one-half of the alarm's maximum design flow rate. After reduction of pressure or flow rate, the oil content in the mixture is increased until the alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation of the alarm is taken.

(3) If the alarm has a positive displacement mixture pump, the influent pressure is increased to twice the alarm's minimum design pressure. If the alarm has a centrifugal mixture

pump or if the alarm is not equipped with a mixture pump, the influent flow rate is increased to twice the alarm's maximum design flow rate. After increasing the pressure or flow rate, the oil content in the mixture is increased until the alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation is taken.

(e) *Test No. 4A Shutoff Test.* (1) The steps described in paragraph (d)(1) of this section are repeated.

(2) The metering and water pumps of the test rig are stopped for 8 hours with the bilge alarm left turned on with no other changes made.

(3) The metering and water pumps are started and the Test Fluid B content of the mixture is increased until the bilge alarm actuates. A sample of the mixture causing actuation is taken. The bilge alarm ppm display readings before and after the 8-hour period will be recorded.

(f) *Test No. 5A Supply Voltage Variation Test.* (1) The supply voltage to the bilge alarm is raised to 110 percent of its design supply voltage. The bilge alarm is fed with a mixture of Test Fluid B and water and the test fluid content of the mixture is increased until the bilge alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation is taken.

(2) The supply voltage to the alarm is lowered to 90 percent of its design supply voltage. The bilge alarm is fed with a mixture of Test Fluid B and water and the test fluid content of the mixture is increased until the bilge alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation is taken.

(3) Upon completion of the steps described in paragraph (f)(2) of this section, the supply voltage to the alarm is returned to its design value.

(4) The steps described in paragraphs (f)(1) through (f)(3) of this section are repeated varying each other power supply to the alarm in the manner prescribed in those steps for supply voltage.

(g) *Test No. 6A Calibration and Zero Drift Test.* (1) The steps described in paragraph (b)(1) of this section are repeated and then the steps in paragraph (d)(1) of this section are repeated.

(2) The bilge alarm is fed with a 15 ppm mixture of Test Fluid B and water for eight hours and any calibration drift is recorded. Samples of the mixture must be taken at the beginning of the test and at 2-hour intervals until the completion of the 8-hour period.

(3) Following the steps in paragraph (g)(2) of this section, the bilge alarm must be run on clean, oil-free water only and any zero drift must be recorded.

(h) *Test No. 7A Response Time Test.* (1) The bilge alarm is fed with a 40 ppm mixture of Test Fluid B and water until the bilge alarm actuates. The time of turning on the metering pump of the test rig and the time of alarm actuation are recorded. The flow rate on the flow meter of the test rig is also recorded.

(i) *Test No. 8A Shutdown and Restart Test.* (1) All power to the bilge alarm is shutoff for 1 week. After 1 week the alarm is then restarted, zeroed, and calibrated.

(2) The steps described in paragraph (d)(1) of this section are repeated. Water is then fed to the bilge alarm for 1 hour.

(3) The steps described in paragraph (i)(2) of this section are repeated seven additional times. During the last hour, the alarm must be inclined at an angle of 22.5° with the plane of its normal operating position.

[USCG–2004–18939, 74 FR 3391, Jan. 16, 2009]

§ 162.050–37 Vibration test.

(a) Equipment submitted for Coast Guard approval must first be tested under the conditions prescribed in paragraph (b) of this section. The test must be performed at an independent laboratory that has the equipment to subject the item under test to the vibrating frequencies and amplitudes prescribed in paragraph (b) of this section. The test report submitted with the application for Coast Guard approval must be prepared by the laboratory and must contain the test results.

(b)(1) Each oil content meter and bilge alarm and each control of a separator must be subjected to continuous sinusoidal vibration in each of the following directions for a 2 hour period in each direction:

(i) Vertically up and down;